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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/699,397	10/31/2003	Jason R. Brindel	9314-41	3313

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EXAMINER	
VU, PHU	

ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 06/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/699,397	BRINDEL, JASON R.	
	Examiner	Art Unit	
	Phu Vu	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-35 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-35 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 31 October 2003 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 35 is rejected under 35 U.S.C. 102(b) as being anticipated by Little US Patent No. 6034807.

Regarding claim 35, in Little display is considered to have pure transmissive and pure reflective modes since when the mirrors are in reflective mode they are perpendicular to light incident surface (see fig. 3c element 12 left side) of the display and block light from the backlight and when in transmissive mode they are perpendicular to the light incident surface (see fig. 3c element 12 right side) so no light is reflected and no light from the backlight is blocked by the mirrors.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4, 7, and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim US Patent No. 6750932 in view Lee et al US Patent No. 6556334 and Little et al US Patent No. 6034807.

Regarding claim 1, Kim teaches a traditional transflective liquid crystal display (see fig. 4), however, Kim fails to teaches a micro-electromechanical reflective array; and a plurality of plates being movable between first and second positions, the plates being configured to operate in a first mode of operation when the plurality of plates are in the first position and configured to operate in a second mode of operation when the plurality of plates are in the second position. Little teaches a micro-electromechanical reflective array (bistable mirror array see fig. 3a element 12), and a plurality of plates being movable between first and second positions, the plates being configured to operate in a first mode of operation when the plurality of plates are in the first position and configured to operate in second mode of operation when the plurality of plates are in the second position (see column 4 lines 46-65). Lee teaches a micro-electromechanical mirror device for liquid crystal to improve efficiency in light utilization, and a reduced pixel size and reduced fabricating cost due to semiconductor processing techniques (see column 2 lines 46-60). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to use a micro-electromechanical mirror device for a transflector in Baek's transflective display to improve efficiency in light utilization, reduce pixel size and reduce fabrication costs.

Regarding claim 2, Little's micro-electromechanical mirror sections correspond pixels (see column 5 lines 42-55), and the first mode of operation is a reflective mode and the second mode of operation is a transmissive mode (see column 4 lines 46-65).

Regarding claim 3, Little's mirror array the transmissive and reflective modes are considered pure reflective modes since when the mirrors are in reflective mode

they are perpendicular to light incident surface (see fig. 3c element 12 left side) of the display and block light from the backlight and when in transmissive mode they are perpendicular to the light incident surface (see fig. 3c element 12 right side) so no light is reflected and no light from the backlight is blocked by the mirrors.

Regarding claim 4, Little shows a backlight (see fig. 1 element 34). Note: figs. 1-7 all relate to a single embodiement of the invention and show different views or aspects of operation.

Regarding claim 7, Little shows a plurality of hinges associated with the plurality of plates and attached to the micro-electromechanical array and configured to move the plates between first and second positions (fig. 5a and 5b show a detailed view of the hinge).

Regarding claim 13, Kim teaches an artificial light source (see fig. 4 element 141), a micro-electromechanical reflecting array overlying the artificial light source (fig. 4 element 150 Little's transflector used in place here see claim 1 rejection), a rear polarizer array layer overlying the rear polarizer layer (fig. 4 element 114), a first transparent layer over the rear polarizing layer (fig. 4 element 111), a liquid crystal display layer over the first transparent layer (fig. 4 element 130), a second transparent layer over the liquid crystal layer (fig. 4 element 121) and a front polarizer layer over the second transparent layer (see fig. 4 element 125).

Regarding claim 14, Little shows the plates substantially parallel to the liquid crystal layer (see fig. 3c element 12 right side), and in the second position the plates substantially normal to the liquid crystal layer (see fig. 3c element 12 left side).

Claim 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim, Lee, and Little in view of Taniguchi et al US Patent No. 6700634.

Regarding claim 5, Kim, Lee and Little disclose all the limitations of claim 5 except the light source being an LED with diffuser or an electroluminescent panel. Taniguchi discloses an LED (fig. 2 element 1) light source with diffuser (see fig. 2 element 5) to limit power consumption and mounting space (see column 1 lines 30-35). Therefore, at the time of the invention it would have been obvious to one of ordinary skill in the art to use an LED with diffuser to limit power consumption and reduce mounting space.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim, Lee, Little and Taniguchi in view of McCartney et al US Patent No. 5280371.

Regarding claim 6, Kim, Lee, Little, Taniguchi teach all the limitations of claim 6 except the diffuser being a Lambertian diffuser. McCartney teaches a Lambertian diffuser to provided equal luminance in all angular view directions (see column 3 lines 15-23). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to use a Lambertian diffuser to provide equal luminance in all angular viewing directions.

Claims 8-12 ,15, 16, and 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim, Lee, and Little in view of Weindorf US Patent no. 6762741.

Regarding claim 8, Kim, Lee, and Little disclose all the limitations of claim 8 except a sensor operably associated with the liquid crystal display and configured to sense ambient light and generate a control signal responsive thereto, wherein the

plurality of micro-electromechanical hinges are further configured to move the plurality of plates between first and second positions. Weindor discloses a sensor associated with the liquid crystal display that outputs a signal based on the intensity of ambient light and determine a mode night (transmissive) and day (reflective) thereby automatically controlling the display mode (see column 14 lines 5-22). In this case switching between a night and day mode would require the plates to move the plates between perpendicular and parallel positions. Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to incorporate an ambient light sensor to automatically control the display mode.

Regarding claim 9, Weindorf discloses the sensor to be a photodiode (see column 6 lines 20-25).

Regarding claim 10, Little shows the micro-electromechanical array and the plurality of plates (fig. 3a elements 42a and 42b) comprise conductive elements wherein the conductive plates are attracted to the conductive array when the control signal is applied (see fig. 3b element 62 right) and not attracted to the conductive array when the control signal is not applied (see fig. 3b element 62 left).

Regarding claim 11, Little shows the conductive plates are not attracted to the conductive array when a voltage is not applied (see fig. 3b).

Regarding claim 12, Little shows the control signal being a voltage (see fig. 3b).

Regarding claim 15, Kim teaches a traditional transflective liquid crystal display (see fig. 4), however, Kim fails to teaches a micro-electromechanical reflective array; and a plurality of plates being movable between first and second positions, the plates

being configured to operate in a first mode of operation when the plurality of plates are in the first position and configured to operate in a second mode of operation when the plurality of plates are in the second position. Little teaches a micro-electromechanical reflective array (bistable mirror array see fig. 3a element 12), and a plurality of plates being movable between first and second positions, the plates being configured to operate in a first mode of operation when the plurality of plates are in the first position and configured to operate in second mode of operation when the plurality of plates are in the second position (see column 4 lines 46-65). Lee teaches a micro-electromechanical mirror device for liquid crystal to improve efficiency in light utilization, and a reduced pixel size and reduced fabricating cost due to semiconductor processing techniques (see column 2 lines 46-60). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to use a micro-electromechanical mirror device for a transflector in Baek's transflective display to improve efficiency in light utilization, reduce pixel size and reduce fabrication costs.

Kim, Lee, and Little fail to disclose a sensor operably associated with the liquid crystal display and configured to sense ambient light and generate a control signal responsive thereto, wherein the plurality of micro-electromechanical hinges are further configured to move the plurality of plates between first and second positions. Weindor discloses a sensor associated with the liquid crystal display that outputs a signal based on the intensity of ambient light and determine a mode night (transmissive) and day (reflective) thereby automatically controlling the display mode (see column 14 lines 5-22). In this case switching between a night and day mode would require the plates to

move the plates between perpendicular and parallel positions. Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to incorporate an ambient light sensor to automatically control the display mode. Little shows the micro-electromechanical array and the plurality of plates (fig. 3a elements 42a and 42b) comprise conductive elements wherein the conductive plates are attracted to the conductive array when the control signal is applied (see fig. 3b element 62 right) and not attracted to the conductive array when the control signal is not applied (see fig. 3b element 62 left).

Regarding claim 16, Little the mirrors are in reflective mode they are perpendicular to light incident surface (see fig. 3c element 12 left side) of the display and block light from the backlight and when in transmissive mode they are perpendicular to the light incident surface (see fig. 3c element 12 right side) so no light is reflected and no light from the backlight is blocked by the mirrors.

Regarding claim 22, Little shows the micro-electromechanical array and the plurality of plates (fig. 3a elements 42a and 42b) comprise conductive elements wherein the conductive plates are attracted to the conductive array when the control signal is applied (see fig. 3b element 62 right) and not attracted to the conductive array when the control signal is not applied (see fig. 3b element 62 left).

Regarding claim 23, Little shows the conductive plates are not attracted to the conductive array when a voltage is not applied (see fig. 3b).

Regarding claim 24, Little shows the control signal being a voltage (see fig. 3b).

Regarding claim 25, Kim teaches an artificial light source (see fig. 4 element 141), a micro-electromechanical reflecting array overlying the artificial light source (fig. 4 element 150 Little's transflector used in place here see claim 1 rejection), a rear polarizer array layer overlying the rear polarizer layer (fig. 4 element 114), a first transparent layer over the rear polarizing layer (fig. 4 element 111), a liquid crystal display layer over the first transparent layer (fig. 4 element 130), a second transparent layer over the liquid crystal layer (fig. 4 element 121) and a front polarizer layer over the second transparent layer (see fig. 4 element 125).

Claim 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim, Lee, and Little and Weindorf in view of Taniguchi et al US Patent No. 6700634.

Regarding claim 17, Kim, Lee and Little disclose all the limitations of claim 17 except the light source being an LED with diffuser or an electroluminescent panel. Taniguchi discloses an LED (fig. 2 element 1) light source with diffuser (see fig. 2 element 5) to limit power consumption and mounting space (see column 1 lines 30-35). Therefore, at the time of the invention it would have been obvious to one of ordinary skill in the art to use an LED with diffuser to limit power consumption and reduce mounting space.

Claims 18 -21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim, Lee, Little, Weindorf and Taniguchi in view of McCartney et al US Patent No. 5280371.

Regarding claim 18, Kim, Lee, Little, Weindorf and Taniguchi teach all the limitations of claim 18 except the diffuser being a Lambertian diffuser. McCartney teaches a Lambertian diffuser to provided equal luminance in all angular view directions (see column 3 lines 15-23). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to use a Lambertian diffuser to provide equal luminance in all angular viewing directions.

Regarding claim 19, Little shows a plurality of hinges associated with the plurality of plates and attached to the micro-electromechanical array and configured to move the plates between first and second positions (fig. 5a and 5b show a detailed view of the hinge).

Regarding claim 20, Little shows the hinge further configured to move the plurality of plates between first and second positions in response to a control signal (see fig. 3b).

Regarding claim 21, Weindorf discloses the sensor to be a photodiode (see column 6 lines 20-25).

Claim 26-30 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim, Lee, and Little in view of Hsieh US Patent No. 6879308.

Regarding claim 26, Kim, Lee, and Little disclose all the limitations of claim 26 (see claim 1 rejection), except for a housing to fit the liquid crystal display. Hsieh teaches a housing to receiving a flat panel display (see abstract) which in turn protects the components. Therefore, at the time of the invention, it would have been obvious to

one of ordinary skill in the art to use housing to receive/ fit a liquid crystal display thereby protecting its components.

Regarding claim 27, Little's micro-electromechanical mirror sections correspond pixels (see column 5 lines 42-55), and the first mode of operation is a reflective mode and the second mode of operation is a transmissive mode (see column 4 lines 46-65).

Regarding claim 28, Little's mirror array the transmissive and reflective modes are considered pure reflective modes since when the mirrors are in reflective mode they are perpendicular to light incident surface (see fig. 3c element 12 left side) of the display and block light from the backlight and when in transmissive mode they are perpendicular to the light incident surface (see fig. 3c element 12 right side) so no light is reflected and no light from the backlight is blocked by the mirrors.

Regarding claim 29, Little shows an artificial light source(see fig. 1 element 34) which is adjacent to the micromechanical array (see fig. 1 element 12) and wherein the light source is exposed through the plurality of plates in transmissive mode (see fig. 3b). Note: figs. 1-7 all relate to a single embodiement of the invention and show different views or aspects of operation.

Regarding claim 30, Little shows a plurality of hinges associated with the plurality of plates and attached to the micro-electromechanical array and configured to move the plates between first and second positions (fig. 5a and 5b show a detailed view of the hinge).

Regarding claim 34, Little shows the plates substantially parallel to the liquid crystal layer (see fig. 3c element 12 right side), and in the second position the plates substantially normal to the liquid crystal layer (see fig. 3c element 12 left side).

Claim 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim, Lee, Little and Hsieh in view of Weindorf et. al US Patent no. 6762741.

Regarding claim 31 , Kim, Lee, and Little and Hsieah disclose all the limitations of claim 31 except a sensor operably associated with the liquid crystal display and configured to sense ambient light and generate a control signal responsive thereto, wherein the plurality of micro-electromechanical hinges are further configured to move the plurality of plates between first and second positions. Weindorf discloses a sensor associated with the liquid crystal display that outputs a signal based on the intensity of ambient light and determine a mode night (transmissive) and day (reflective) thereby automatically controlling the display mode (see column 14 lines 5-22). In this case switching between a night and day mode would require the plates to move the plates between perpendicular and parallel positions. Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to incorporate an ambient light sensor to automatically control the display mode.

Regarding claim 32, Little shows the micro-electromechanical array and the plurality of plates (fig. 3a elements 42a and 42b) comprise conductive elements wherein the conductive plates are attracted to the conductive array when the control signal is applied (see fig. 3b element 62 right) and not attracted to the conductive array when the control signal is not applied (see fig. 3b element 62 left).

Regarding claim 33, Little shows the conductive plates are not attracted to the conductive array when a voltage is not applied (see fig. 3b).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phu Vu whose telephone number is (571)-272-1562. The examiner can normally be reached on 8AM-5PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (571)-272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

T. NGUYEN
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